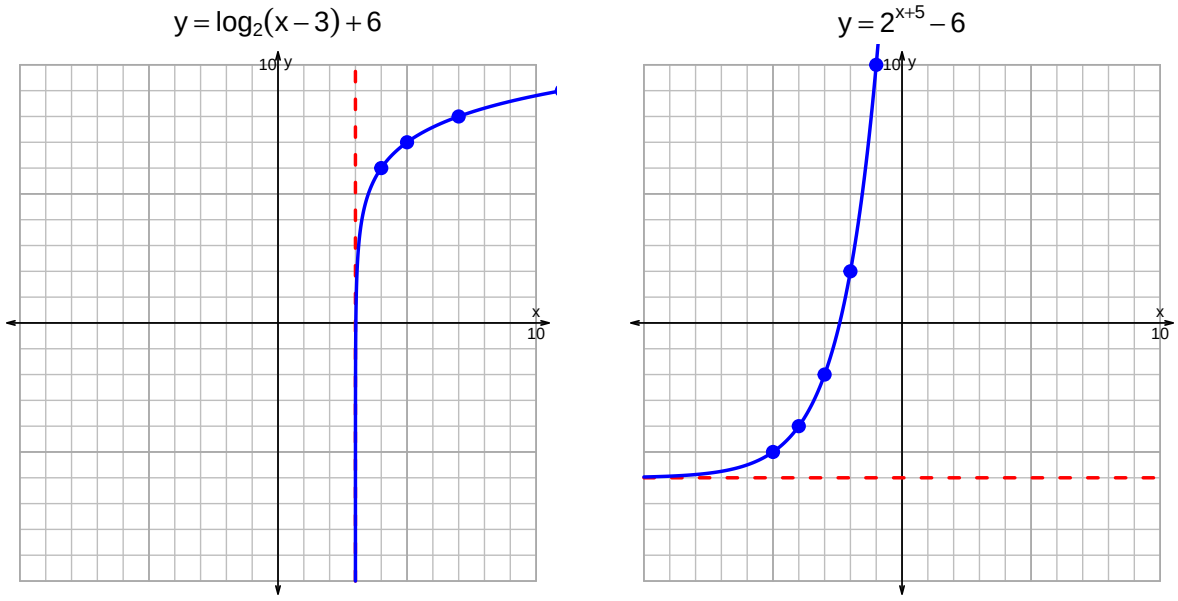
Name: Date:

S18QUIZ: EXP LOG (SLTN v246)

1. Graph $y = \log_2(x-3)+6$ and $y = 2^{x+5}-6$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-29 = \left(\frac{-5}{3}\right) \cdot 2^{7t/4}$$

Divide both sides by $\frac{-5}{3}$.

$$\frac{29 \cdot 3}{5} = 2^{7t/4}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{29 \cdot 3}{5}\right) = \frac{7t}{4}$$

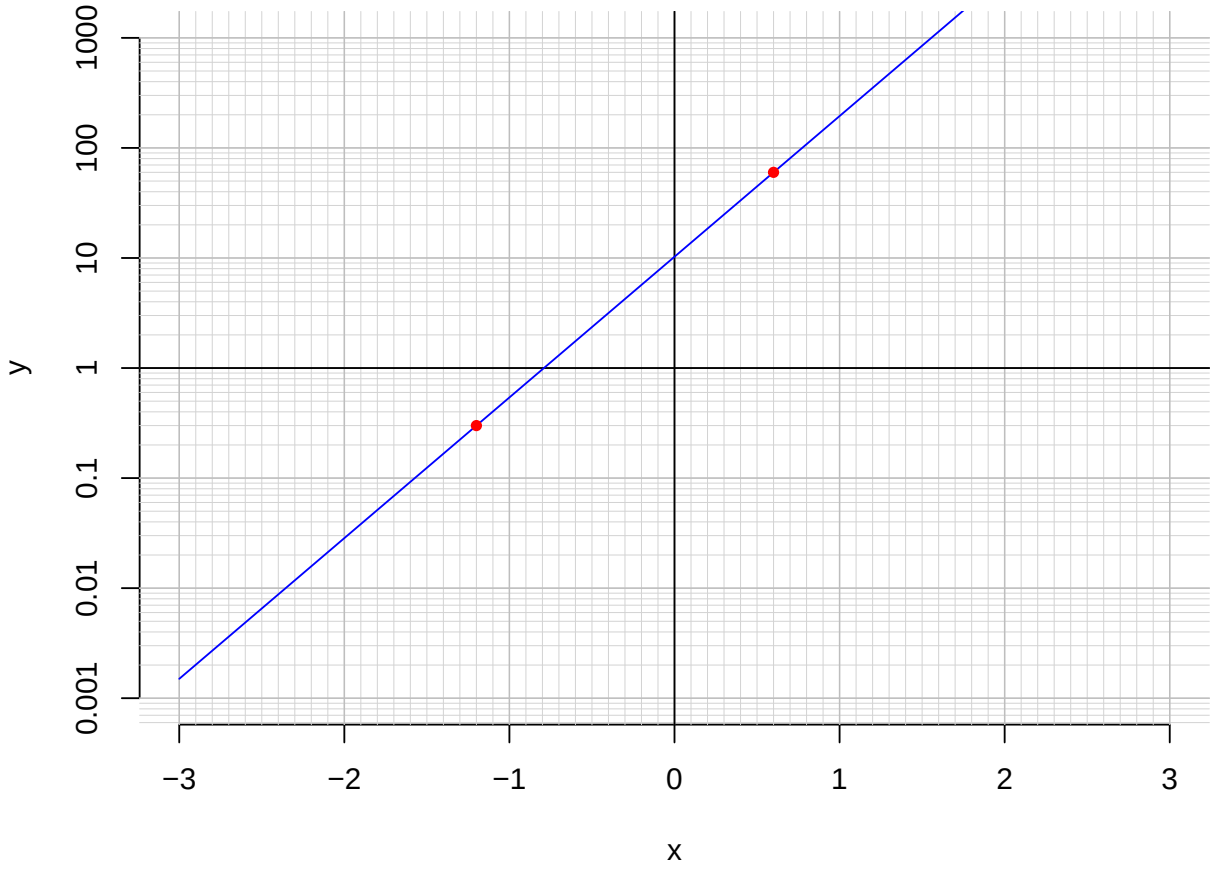
Divide both sides by $\frac{7}{4}$.

$$\frac{4}{7} \cdot \log_2\left(\frac{29 \cdot 3}{5}\right) = t$$

Switch sides.

$$t = \frac{4}{7} \cdot \log_2\left(\frac{29 \cdot 3}{5}\right)$$

3. An exponential function $f(x) = 10.3 \cdot e^{2.94x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-1.2)$.

$$f(-1.2) = 0.3$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{2.94} \cdot \ln\left(\frac{x}{10.3}\right)$$

c. Using the plot above, evaluate $f^{-1}(60)$.

$$f^{-1}(60) = 0.6$$